REMARKS

Claims 9 to 12 and 14 to 21 as set forth in Appendix II of this paper are currently pending in this case. Claim 13 has been canceled, Claims 9, 12, 15, 17 and 18 have been amended, and Claims 19 to 21 have been added, as indicated in the Listing of Claims set forth in Appendix I of this paper.

Accordingly, Claim 9 has been amended to refer to styrene-acrylonitrile copolymers[1] having a proportion of acrylonitrile of less than 28% by weight[2]. The proportion of acrylonitrile in components A and B2 referenced in Claims 12 and 15 has been specified correspondingly[3]. Claims 17 and 18 have been amended to depend upon Claim 15 and new Claim 19, respectively. New Claim 19 relates to the composition defined in Claim 15, wherein the phyllosilicate is mica[4]. Correspondingly, new Claim 20 relates to the method of Claim 12 wherein mica is used as the phyllosilicate[4]. New Claim 21 is drawn to a method wherein mica is utilized to improve the chemicals resistance, reduce the swelling, and improve the stress-cracking resistance of styrene copolymers[5]. No new matter has been added.

The Examiner has rejected Claims 9 to 18 under 35 U.S.C. §103(a) as being unpatentable in light of the disclosure of ***Hilti et al.*** (**US 5,814,688**). Favorable reconsideration of the Examiner's position and withdrawal of the respective rejection is respectfully solicited in light of the following.

To establish a obviousness within the meaning of Section 103(a), three basic criteria must be met. First, the reference itself or the knowledge generally available to one of ordinary skill in the art must provide some suggestion or motivation to modify the reference. Second, there must be a reasonable expectation of success when the

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1) The revised wording is supported by applicants' disclosure page 5, indicated line 7, of the application.

2) The acrylonitrile content is supported by applicants' disclosure on page 3, indicated line 29, of the application.

3) The revision is supported by Claim 13, by the last paragraph of Claim 15, and by applicants' disclosure referenced in footnote (2).

4) The respective embodiment of applicants' invention is disclosed on page 4, indicated line 6, of the application.

5) The subject matter is supported by applicants' Claim 9 as filed in conjunction with the disclosure referenced in footnote (4).

modification is made. Third, the prior art reference must teach or suggest all of the limitations set forth in the claim. The teaching or suggestion to make the claimed combination as well as the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure[6)].

Applicants' invention as defined in independent Claim 9 relates to a method for improving the chemicals resistance, reducing the swelling, and improving the stress-cracking resistance of styrene-acrylonitrile copolymers having a proportion of acrylonitrile of less than 28% by weight. Applicants have found that those particular goals are achieved when phyllosilicates are added to the particular styrene-acrylonitrile copolymers.

The teaching of ***Hilti et al.*** relates to improving the antistatic properties by increasing the volume conductivity of thermoplastic, structurally crosslinked or crosslinkable polymers. To this end the polymers are combined with[7)]

(a) a polar, adsorptive inorganic or organic material in form of fibers or particles which are in mutual contact and

(b) a polar antistatic agent which is adsorptively bound to (a).

Materials which ***Hilti et al.*** consider suitable as component (a) include naturally occurring mineral flours, molecular sieve zeolites, phyllosilicates (*particularly those having a fibrous composition*), porous adsorptive organic materials, and absorptive organic fibers[8)]. In accordance with ***Hilti et al.***'s disclosure the volume conductivity of virtually all crosslinked or crosslinkable polymers can be improved with the combination of (a) and (b)[9)] without essentially affecting the stability properties and the optical properties of those polymers[10)].

As such, the disclosure of ***Hilti et al.*** neither suggests or implies that the combination of (a) and (b), or more particularly the constituent (a) of that combination, has an essential effect on the

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6) In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (CAFC 1991).

7) Col. 2, indicated lines 10, 22, and 23, in conjunction with col. 1, indicated lines 3 to 20, of ***US 5,814,688***.

8) Col. 6, indicated line 13, to col. 7, indicated line 60, of ***US 5,814,688***.

9) Note the generic enumeration of 28 classes of such polymers in col. 2, indicated line 64, to col. 5, indicated line 60, of ***US 5,814,688***, which includes a reference to copolymers of styrene or α-methylstyrene with dienes or acrylic derivatives as No. 6, col. 4, indicated lines 1 to 12, of ***US 5,814,688***.

10) Col. 2, indicated lines 46 to 51, of ***US 5,814,688***.

chemical resistance or the stress-cracking resistance of any one of the crosslinked or crosslinkable polymers, or on the tendency of those crosslinked or crosslinkable polymers to swell. Moreover, the teaching of ***Hilti et al.*** is by far too generic to suggest or imply any particular effects pertaining to the chemical resistance, the stress-cracking resistance, or the swelling of a styrene-acrylonitrile copolymer having a proportion of acrylonitrile of less than 28% by weight. The disclosure of ***Hilti et al.*** not only fails to teach or suggest all of the limitations which characterize applicants' invention as defined in Claim 9, it also falls short to provide for the reasonably expectation that the particular properties of the styrene-acrylonitrile copolymers which have a proportion of acrylonitrile of less than 28% by weight which are addressed by applicants' method can be affected. As such, the disclosure of ***Hilti et al.*** does not meet the three criteria which are necessary to establish obviousness within the meaning of Section 103(a). The same applies mutatis mutandis to the subject matter defined in applicants' Claims 10 to 12, 14 and 20 which depend, directly or indirectly, upon Claim 9 and which incorporate the limitations of Claim 9 by reference[11]. Withdrawal of the Examiner's rejection of Claims 9 to 12 and 14 as being unpatentable under Section 103(a) in light of the disclosure of ***Hilti et al.*** is therefore respectfully solicited.

Applicants' invention as defined in independent Claim 15 relates to a thermoplastic molding composition comprising particular styrene-acrylonitrile copolymers having a proportion of acrylonitrile of less than 28% by weight[12] and, additionally, from 0.05 to 5 parts by weight of a phyllosilicate[13]. Applicants have found that those particular molding compositions exhibit an improved resistance against the influence of chemicals and an improved resistance to stress-cracking, and are less susceptible to swelling[14]. As addressed in the foregoing, the teaching of ***Hilti et al.*** neither suggests not implies

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11) If an independent claim is non-obvious under 35 U.S.C. §103, then any claim depending therefrom is non-obvious (In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (CAFC 1988)).

12) Components (A) and (B) as defined in Claim 15.

13) Component (C) as defined in Claim 15.

14) The invention as a whole under 35 U.S.C. §103 includes not only the particular combination of features which is literally recited in the claim(s) but also the properties which are disclosed in the specification and which are inherent in the claimed combination of features (In re Antonie, 559 F.2d 618, 620, 195 USPQ 6,8 (CCPA 1977); see also In re Papesch, 315 F.2d 381, 391, 137 USPQ 43, 51 (CCPA 1963)).

that the chemical resistance, the stress-cracking resistance, or the swelling of a styrene-acrylonitrile copolymer having a proportion of acrylonitrile of less than 28% by weight can be affected by adding to the polymer the combination of (a) and (b), or more particularly the constituent (a) of that combination. As such, the teaching of ***Hilti et al.*** falls short from suggesting or implying applicants' invention as as whole pursuant to Section 103(a). Equally, the teaching of ***Hilti et al.*** does not meet the three criteria which are necessary to establish obviousness within the meaning of Section 103(a) because it fails to teach or suggest all of the limitations which characterize applicants' invention as defined in Claim 15, and it also fails to provide for the reasonable expectation that the particular properties of the specified styrene-acrylonitrile copolymers can be affected. The same applies mutatis mutandis to the subject matter defined in applicants' Claims 16 to 19 which depend, directly or indirectly, upon Claim 15 and which incorporate the respective limitations by reference[15]. Withdrawal of the Examiner's rejection of Claims 15 to 18 as being unpatentable under Section 103(a) in light of the disclosure of ***Hilti et al.*** is therefore respectfully solicited.

Applicants' invention as defined in independent Claim 21 relates to a method for improving the chemicals resistance, reducing the swelling, and improving the stress-cracking resistance of styrene copolymers by adding mica.

The phyllosilicates addressed in the teaching of ***Hilti et al.*** as constituent (a) of the (a)/(b) combination are preferably chainlike, fibrous structures with channel like cavities[16], which are structural particularities not present in mica. As concerns the subject matter of applicants' Claim 21, the teaching of ***Hilti et al.*** therefore also fails to meet the three criteria which are necessary to establish obviousness within the meaning of Section 103(a) since it fails to teach or suggest all of the limitations which characterize applicants' invention as defined in Claim 21, and it also fails to provide for the reasonable expectation that the particular properties of the specified styrene copolymers can be affected by adding mica. The subject matter defined in applicants' additional Claim 21 is therefore also not rendered obvious within the meaning of Section 103(a) by the

15) See ftn. (11), page 4 of this paper.

16) Col. 6, indicated lines 54 to 57, of ***US 5,814,688***.

disclosure of ***Hilti t al.*** Favorable action is respectfully solicited.

The Examiner has rejected Claims 9 to 18 under 35 U.S.C. §103(a) as being unpatentable in light of the disclosure of ***Zilg et al.*** (**US 6,197,849**) which relates to particularly treated phyllosilicates which exhibit improved organophilic properties[17]. Due to the treatment, the phyllosilicates serve as fillers which exhibit an improved thermal stability during processing, a greater dispersing effect and improved interfacial adhesion[18]. In accordance with the teaching of ***Zilg et al.***, the phyllosilicates are in particular naturally occurring or synthetic clay minerals[19], and the respective fillers can be incorporated into essentially any thermoplastic polymer, thermosetting polymer system or rubber[20].

With regard to the subject matter of applicants' independent Claim 9, the teaching of ***Zilg et al.*** fails to meet all of the three criteria which are necessary for establishing obviousness within the meaning of Section 103(a). The teaching of ***Zilg et al.*** fails to suggest or imply an effect of the treated phyllosilicates on the chemicals resistance or the stress-cracking resistance of any one of the thermoplastic polymers, thermosetting polymer systems or rubbers, or on the tendency of such polymers or rubbers to swell. Moreover, the teaching of ***Zilg et al.*** is by far too generic to suggest or imply any particular effects to occur where a styrene-acrylonitrile copolymer is concerned which has a proportion of acrylonitrile of less than 28% by weight. The teaching of ***Zilg et al.*** therefore fails to suggest or imply all of the limitations which characterize applicants' method defined in Claim 9. The same applies where the subject matter of applicants' Claims 10 to 12, 14 and 20 is concerned since these claims incorporate the limitations of Claim 9 by reference. Withdrawal of the Examiner's rejection of Claims 9 to 12 and 14 as being unpatentable under Section 103(a) in light of the disclosure of ***Zilg et al.*** is therefore respectfully solicited.

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17) Col. 1, indicated lines 3 to 8 and 37 to 64, of ***US 6,197,849***.

18) Col. 1, ie. indicated lines 40 to 42, of ***US 6,197,849***.

19) Col. 2, indicated line 38 et seq., of ***US 6,197,849***.

20) Col. 5, indicated lines 23 to 28, of ***US 6,197,849***; examples for thermoplastic polymers are addressed in col. 5, indicated lines 40 t0 57, examples for rubbers are addressed in col. 5, indicated lines 58 to 65, and examples for thermosetting polymer systems are addressed in col. 5, indicated line 66, to col. 7, indicated line 62.

The teaching of ***Zilg t al.*** also fails to suggest or imply all of the limitations which characterize applicants' thermoplastic molding composition defined in Claim 15, which requires the presence of a particular copolymer of styrene and/or α-methylstyrene and acrylonitrile as component (A) wherein the proportion of acrylonitrile is from 10 to 28% by weight. Moreover, the teaching of ***Zilg et al.*** does not render applicants' invention as defined in Claim 15 as a whole obvious within the meaning of Section 103(a)[21] because it neither suggests nor implies the particular properties of the thermoplastic molding composition which result from the claimed combination of the particular copolymer of styrene and/or α-methylstyrene and acrylonitrile which constitutes component (A) and the phyllosilicate which are addressed and illustrated in the application[22]. Claims 16 to 19 depend either directly or indirectly upon Claim 15, so that the foregoing equally applies where those dependent claims are concerned[23]. It is therefore respectfully requested that the rejection of Claims 15 to 19 as being unpatentable under Section 103(a) in light of the teaching of ***Zilg et al.*** be withdrawn. Favorable action is solicited.

The method defined in applicants independent Claim 21 requires the utilization of mica to reduce the swelling and to improve the chemicals resistance and the stress-cracking resistance of styrene copolymers whereas, in accordance with the teaching of ***Zilg et al.***, the phyllosilicates are in particular naturally occurring or synthetic clay minerals. As concerns the subject matter of applicants' Claim 21, the teaching of ***Zilg et al.*** therefore also fails to meet all of the three criteria which are necessary to establish obviousness within the meaning of Section 103(a) since it fails to teach or suggest all of the limitations which characterize applicants' invention as defined in Claim 21, and it also fails to provide for the reasonable expectation that the particular properties of the specified styrene copolymers can be affected by adding mica. The subject matter defined in applicants' additional Claim 21 is therefore also not rendered obvious within the meaning of Section 103(a) by the disclosure of ***Zilg et al.*** Favorable action is respectfully solicited.

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21) See ftn. (14), page 4 of this paper.

22) Note, for example, page 1, indicated lines 24 to 30, of the application, and the data set forth in Table 5, page 20, of the application.

23) See ftn. (11), page 4 of this paper.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 11.0345. Please credit any excess fees to such deposit account.

Respectfully submitted,
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Encl.: THE LISTING OF CLAIMS (Appendix I)
THE CURRENT CLAIMS (Appendix II)

HBK/BAS

APPENDIX I:

THE LISTING OF CLAIMS (version with markings):

1. (*canceled*)

2. (*canceled*)

3. (*canceled*)

4. (*canceled*)

5. (*canceled*)

6. (*canceled*)

7. (*canceled*)

8. (*canceled*)

9. (*currently amended*) A method for improving the chemicals resistance, reducing the swelling, and improving the stress-cracking resistance of styrene-acrylonitrile copolymers having a proportion of acrylonitrile of less than 28% by weight, comprising the step of adding phyllosilicates to said styrene-acrylonitrile copolymers.

10. (*previously presented*) The method as claimed in claim 9, wherein the chemical resistance is improved with respect to chemicals selected from alcohols, C_3-C_8 alkanes, gasoline, premium gasoline, diesel, halogenated hydrocarbons, hypochlorite salts, and sodium dichloroisocyanate dihydrate.

11. (*previously presented*) The method as claimed in claim 9, wherein the phyllosilicates used have been selected from kaolinite types, serpentine types, pyrophyllite, and silicates of mica type, and mica.

12. (*currently amended*) The method as claimed in claim 9, wherein the styrene copolymers have been built up from components A, C, and, where appropriate, B, D, and E, using:

    a: as component A, from 20 to 100% by weight, based on the entirety of components A + B, of a hard component made from one or more copolymers of styrene and/or α-methylstyrene with acrylonitrile, the proportion of acrylonitrile being from 10 to [~~50%~~] less than 28% by weight,

b: from 0 to 80% by weight, based on the entirety of components A + B, of at least one graft copolymer B made from

b1: as component B1, from 10 to 90% by weight of at least one elastomeric particulate graft base with a glass transition temperature below 0°C, and

b2: as component B2, from 10 to 90% by weight of at least one graft made from polystyrene or from a copolymer of styrene and/or α-methylstyrene with acrylonitrile, the proportion of acrylonitrile being from 10 to [~~50%~~] less than 28% by weight,

where the entirety of the components A + B used is from 10 to 100 parts by weight, based on the total weight of the components used,

c: as component C, from 0.05 to 5 parts by weight, based on the total weight of the components used, of a phyllosilicate,

d: as component D, from 0 to 90 parts by weight, based on the total weight of the components used, of at least one polycarbonate, and

e: as component E, from 0 to 20 parts by weight, based on the total weight of the components used, of other conventional auxiliaries and fillers.

13. (*canceled*)

14. (*previously presented*) The method as claimed in claim 12, wherein the proportion of acrylonitrile is from 18 to 27% by weight.

15. (*currently amended*) A thermoplastic molding composition built up from components A, C, and where appropriate, B, D and E, using

a: as component A, from 20 to 100% by weight, based on the entirety of components A + B, of a hard component made from one or more copolymers of styrene and/or α-methylstyrene with acrylonitrile, the proportion of acrylonitrile being from 10 to [~~50%~~] less than 28% by weight,

b: from 0 to 80% by weight, based on the entirety of components A + B, of at least one graft copolymer B made from

b1: as component B1, from 10 to 90% by weight of at least one elastomeric particulate graft base with a glass transition temperature below 0°C, and

b2: as component B2, from 10 to 90% by weight of at least one graft made from polystyrene or from a copolymer of sty-

rene and/or α-methylstyrene with acrylonitrile, the proportion of acrylonitrile being from 10 to [~~50%~~] less than 28% by weight,

where the entirety of the components A + B used is from 10 to 100 parts by weight, based on the total weight of the components used,

c: as component C, from 0.05 to 5 parts by weight, based on the total weight of the components used, of a phyllosilicate,

d: as component D, from 0 to 90 parts by weight, based on the total weight of the components used, of at least one polycarbonate, and

e: as component E, from 0 to 20 parts by weight, based on the total weight of the components used, of other conventional auxiliaries and fillers[~~,~~].

[~~wherein the proportion of acrylonitrile in components A, and where appropriate, B2 of the styrene copolymers is less than 28% by weight, based on each appropriate component.~~]

16. (*previously presented*) A thermoplastic molding composition as claimed in claim 15, wherein the proportion of acrylonitrile is from 18 to 27% by weight.

17. (*currently amended*) A process for preparing the styrene polymers with improved chemical resistance[~~, built up from components A, C, and, where appropriate, B, D, and E,~~] as claimed in claim [~~12~~] 15, which comprises separately preparing components A[~~,~~] and C, and, where appropriate, components B, D, and E, combining component A with component C, and intimately mixing and then extruding the same with components B, D, and E, as appropriate.

18. (*currently amended*) A process for preparing the styrene polymers with improved chemical resistance[~~, built up from components A, C, and, where appropriate, B, D, and E,~~] as claimed in claim [~~13~~] 19, which comprises separately preparing components A[~~,~~] and C, and, where appropriate, components B, D, and E, combining component A with component C, and intimately mixing and then extruding the same with components B, D, and E, as appropriate.

19. (*new*) The thermoplastic molding composition as claimed in claim 15, wherein the phyllosilicate is mica.

20. (*new*) The method as claimed in claim 12, wherein the phyllosilicate is mica.

21. (*new*) A method for improving the chemicals resistance, reducing the swelling, and improving the stress-cracking resistance of styrene copolymers, which comprises adding to said copolymers an effective amount of mica.

APPENDIX II:

THE CURRENT CLAIMS (clean version):

1. (*canceled*)

2. (*canceled*)

3. (*canceled*)

4. (*canceled*)

5. (*canceled*)

6. (*canceled*)

7. (*canceled*)

8. (*canceled*)

9. (*currently amended*) A method for improving the chemicals resistance, reducing the swelling, and improving the stress-cracking resistance of styrene-acrylonitrile copolymers having a proportion of acrylonitrile of less than 28% by weight, comprising the step of adding phyllosilicates to said styrene-acrylonitrile copolymers.

10. (*previously presented*) The method as claimed in claim 9, wherein the chemical resistance is improved with respect to chemicals selected from alcohols, C_3-C_8 alkanes, gasoline, premium gasoline, diesel, halogenated hydrocarbons, hypochlorite salts, and sodium dichloroisocyanate dihydrate.

11. (*previously presented*) The method as claimed in claim 9, wherein the phyllosilicates used have been selected from kaolinite types, serpentine types, pyrophyllite, and silicates of mica type, and mica.

12. (*currently amended*) The method as claimed in claim 9, wherein the styrene copolymers have been built up from components A, C, and, where appropriate, B, D, and E, using:

    a: as component A, from 20 to 100% by weight, based on the entirety of components A + B, of a hard component made from one or more copolymers of styrene and/or α-methylstyrene with acrylonitrile, the proportion of acrylonitrile being from 10 to less than 28% by weight,

b: from 0 to 80% by weight, based on the entirety of components A + B, of at least one graft copolymer B made from

b1: as component B1, from 10 to 90% by weight of at least one elastomeric particulate graft base with a glass transition temperature below 0°C, and

b2: as component B2, from 10 to 90% by weight of at least one graft made from polystyrene or from a copolymer of styrene and/or α-methylstyrene with acrylonitrile, the proportion of acrylonitrile being from 10 to less than 28% by weight,

where the entirety of the components A + B used is from 10 to 100 parts by weight, based on the total weight of the components used,

c: as component C, from 0.05 to 5 parts by weight, based on the total weight of the components used, of a phyllosilicate,

d: as component D, from 0 to 90 parts by weight, based on the total weight of the components used, of at least one polycarbonate, and

e: as component E, from 0 to 20 parts by weight, based on the total weight of the components used, of other conventional auxiliaries and fillers.

13. (*canceled*)

14. (*previously presented*) The method as claimed in claim 12, wherein the proportion of acrylonitrile is from 18 to 27% by weight.

15. (*currently amended*) A thermoplastic molding composition built up from components A, C, and where appropriate, B, D and E, using

a: as component A, from 20 to 100% by weight, based on the entirety of components A + B, of a hard component made from one or more copolymers of styrene and/or α-methylstyrene with acrylonitrile, the proportion of acrylonitrile being from 10 to less than 28% by weight,

b: from 0 to 80% by weight, based on the entirety of components A + B, of at least one graft copolymer B made from

b1: as component B1, from 10 to 90% by weight of at least one elastomeric particulate graft base with a glass transition temperature below 0°C, and

b2: as component B2, from 10 to 90% by weight of at least one graft made from polystyrene or from a copolymer of sty-

rene and/or α-methylstyrene with acrylonitrile, the proportion of acrylonitrile being from 10 to less than 28% by weight,

where the entirety of the components A + B used is from 10 to 100 parts by weight, based on the total weight of the components used,

c: as component C, from 0.05 to 5 parts by weight, based on the total weight of the components used, of a phyllosilicate,

d: as component D, from 0 to 90 parts by weight, based on the total weight of the components used, of at least one polycarbonate, and

e: as component E, from 0 to 20 parts by weight, based on the total weight of the components used, of other conventional auxiliaries and fillers.

16. (*previously presented*) A thermoplastic molding composition as claimed in claim 15, wherein the proportion of acrylonitrile is from 18 to 27% by weight.

17. (*currently amended*) A process for preparing the styrene polymers with improved chemical resistance as claimed in claim 15, which comprises separately preparing components A and C, and, where appropriate, components B, D, and E, combining component A with component C, and intimately mixing and then extruding the same with components B, D, and E, as appropriate.

18. (*currently amended*) A process for preparing the styrene polymers with improved chemical resistance as claimed in claim 19, which comprises separately preparing components A and C, and, where appropriate, components B, D, and E, combining component A with component C, and intimately mixing and then extruding the same with components B, D, and E, as appropriate.

19. (*new*) The thermoplastic molding composition as claimed in claim 15, wherein the phyllosilicate is mica.

20. (*new*) The method as claimed in claim 12, wherein the phyllosilicate is mica.

21. (*new*) A method for improving the chemicals resistance, reducing the swelling, and improving the stress-cracking resistance of styrene copolymers, which comprises adding to said copolymers an effective amount of mica.